Knowledge Mining Academy (Pty) Ltd.

Qualification Overview

Occupational Certificate: Artificial Intelligence Software Developer

Qualification ID

118792

NQF Level

5

Minimum Credits

209

OC: Artificial Intelligence Software Developer

NQF 5 | SAQA ID 118792 | Total Credits: 209

Occupational Purpose

The Occupational Certificate: Artificial Intelligence Software Developer prepares learners to design, develop, implement and maintain AI-enabled software solutions that address real-world business challenges.

Learners develop knowledge and practical skills in programming, artificial intelligence, machine learning, data management, software development and systems integration.

Through structured learning and workplace experience, they learn to build, test and deploy intelligent solutions that support automation, operational efficiency and data-driven decision-making.

Rationale

Artificial intelligence is transforming how organisations operate, analyse information and make strategic decisions.

As businesses adopt AI, machine learning, business intelligence, cloud technologies and intelligent automation, the demand for professionals who can develop and support AI-enabled solutions continues to grow.

The qualification responds to the need for digital capability identified by the Presidential Commission on the Fourth Industrial Revolution and supports the development of skills required for South Africa's future economic growth, innovation and competitiveness.

Every programme is delivered through our proprietary Knowledge MINING™ Learning Methodology, ensuring that learning is practical, contextualised and directly applicable in the workplace.

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A qualified learner will be able to:

- Interpret solution design documentation and develop AI-enabled software solutions.
- Train, test and optimise machine learning models for accuracy and reliability.
- Deploy, monitor and maintain AI solutions throughout their operational lifecycle.
- Integrate AI functionality into software applications using appropriate programming tools, frameworks and APIs.
- Apply AI and data-driven technologies to practical workplace and business challenges.

Target Audience

The qualification is suitable for school leavers who meet the NQF Level 4 entry requirement, TVET graduates, university graduates, new entrants to the Information Technology sector and existing employees seeking to formalise or expand their knowledge of Artificial Intelligence and software development.

It is equally appropriate for organisations wishing to upskill existing employees into future-focused digital and analytical roles.

Career Pathways

Depending on their prior experience, workplace exposure and further development, successful learners may pursue opportunities such as:

- Artificial Intelligence Software Developer
- AI Analyst
- Machine Learning Developer
- Machine Learning Engineer
- Artificial Intelligence Engineer
- Business Intelligence Developer

- Data Analyst
- Analytics Developer
- Data Management Specialist
- Intelligent Automation Developer
- AI Solutions Consultant
- Junior Data Scientist
- AI Research Assistant

Note on Qualification Contextualisation

The scope and extent of contextualisation will be discussed and agreed upon with the client during the project-planning phase. Approved contextualisation requirements will be documented in the Learnership Implementation Plan before the programme commences.

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The Integrated Learning Journey

Building knowledge. Developing skills. Gaining experience. Demonstrating competence.

Knowledge Modules	Practical Modules	Workplace Modules	Statement of Results (SoR)	EISA
The foundation of learning.	*Learning by practical application.*	*Building competence through experience.*	*Official recognition of achievement.*	*The final step to achievement*
Learners build theoretical understanding and conceptual knowledge through structured learning content.	Learners develop practical skills and apply knowledge in simulated or controlled environments.	Learners gain hands-on experience, apply skills in the workplace and develop occupational competence.	On successful completion of all the requirements, the SDP issues the Statement of Results (SoR).	Learners demonstrate integrated competence through external assessment, confirming readiness for skills application and certification.

With knowledge, potential is discovered; through experience, confidence grows; and with competence, the future takes shape.

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Qualification Structure

Duration:

18 - 24 Months

Recognition of Prior Learning Available in Accordance with QCTO Policies.

Entry Requirements:

The minimum entry requirement for this qualification is an NQF Level 4 qualification.

This qualification comprises compulsory Knowledge, Practical Skills & Workplace Experience Modules.

Knowledge Modules

Total credits: 86

- KM-01 Overview of Artificial Intelligence, Level 4, 2 Credits.
- KM-02 Introduction to Mathematics and Statistics, Level 4, 10 Credits.
- KM-03 Analytical Thinking and Problem Solving, Level 4, 3 Credits.
- KM-04 Data, Databases and Data Visualisation, Level 4, 8 Credits.
- KM-05 Computing Theory, Level 4, 8 Credits.
- KM-06 Introduction to Artificial Intelligence, Machine Learning, Deep Learning, Level 4, 5 Credits
- KM-07 Artificial Intelligence, Level 5, 12 Credits.
- KM-08 Machine Learning, Level 5, 16 Credits.
- KM-09 Deep Learning, Level 5, 16 Credits
- KM-10 Introduction to Governance, Legislation and Ethics, Level 4, 1 Credit.
- KM-11 Fundamentals of Design Thinking and Innovation, Level 4, 1 Credit.
- KM-12 4IR and Future Skills, Level 4, 4 Credits.

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Practical Skill Modules

Total credits: 63

- PM-01 Mathematics and Statistics for Programming, Level 4, 8 Credits.
- PM-02 Problem Definition, Analytical Thinking and Decision-Making, Level 4, 2 Credits.
- PM-03 Access, Analyse and Visualise Structured Data Using Spreadsheets, Level 4, 4 Credits.
- PM-04 Use SQL to Communicate with a Database, Level 5, 4 Credits.
- PM-05 Build a simple AI solution using Python, Level 5, 8 Credits.
- PM-06 Use Python Data Scraping to Populate Database Table in SQL, Level 5, 4 Credits.
- PM-07 Use Machine Learning to Build an AI solution in Python, Level 5, 6 Credits.
- PM-08 Use Deep Learning to Build an AI Neural Network Architecture in Python, Level 5, 10 Credits.
- PM-09 Use Deep Learning to Build an AI Neural Network Architecture in TensorFlow, Level 5, 10 Credits.
- PM-10 Function Ethically and Effectively as a Member of a Multidisciplinary Team, Level 4, 3 Credits.
- PM-11 Participate in a Design Thinking for Innovation Workshop, Level 4, 4 Credits.

Workplace Modules

Total credits: 60

- WM-01 AI Solution Design Interpretation and Development, Level 5, 20 Credits.
- WM-02 AI Solution Performance Testing, Level 5, 20 Credits.
- WM-03 AI Solution Deployment, Modification and Improvement, Level 5, 20 Credits.

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Exit Level Outcomes

- Gather and understand data from different sources to identify how AI can be used to solve a real-world problem.
- Analyse the data and prepare a Solution Design Document (SDD) that explains how the proposed AI solution will address the identified problem.
- Select the most suitable type of AI learning method and algorithm to analyse data, identify patterns, make predictions or support decisions.
- Train and test the AI model using machine learning and ensure that it produces accurate and reliable results.
- Select the appropriate machine learning system and develop an AI solution that addresses a real-world problem.
- Implement and run the AI solution on a suitable platform, test it in a real-world environment and evaluate the accuracy of its predictions or results.

Assessment and External Integrated Summative Assessment (EISA)

Assessment is conducted in accordance with QCTO requirements.

The EISA Process: Path to Qualification

1. Qualifying for Entry

Learners must complete all required knowledge, practical skills and workplace experience modules, internal assessments, Portfolio of Evidence and applicable Statements of Results (SoR).

2. Registration and EISA

Eligible learners are registered for the EISA, conducted independently by the relevant AQP at an approved assessment centre in accordance with QCTO requirements.

3. Certification

Learners who pass the EISA receive the relevant Occupational Certificate from the QCTO. Re-assessment may be permitted in line with QCTO/AQP requirements, with any additional fees confirmed in the project agreement.

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International Comparability

- The Occupational Certificate: Artificial Intelligence Software Developer was benchmarked against recognised international AI programmes, including the GreyCampus Certificate Program in Artificial Intelligence, developed in collaboration with IBM, and Microsoft Certified: Azure AI Fundamentals.
- The comparison shows strong alignment in areas such as machine learning, deep learning, Python programming, natural language processing, computer vision and practical AI application.
- A key distinction of the South African qualification is its structured workplace experience component, allowing learners to apply their knowledge and practical skills in a supervised work environment.
- Overall, the qualification compares favourably with international AI programmes and offers a balanced combination of knowledge, practical skills and workplace experience.

Partner with Us & Build Your Organisation's Future AI Talent

Equip your workforce with the skills to develop and apply practical AI solutions. Partner with Knowledge Mining Academy to develop future-ready Artificial Intelligence Software Developers through structured learning, practical application and meaningful workplace experience.

Contact us to start the conversation.

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Contact Us

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Learner Applications sent to any other email address will not be considered.